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Arbor and Wild Life Day

THE UNIVERSITY OF THE STATE OF NEW YORK

BULLETIN TO THE SCHOOLS

VOLUME 37 FEBRUARY 1951 NUMBER 6

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COVER PICTURE: Pileated Woodpecker

From a previously unpublished sketch from life by Louis Agassiz Fuertes, 1903. Courtesy of Department of Birds, American Museum of Natural History.

THE UNIVERSITY OF THE STATE OF NEW YORK

BULLETIN TO THE SCHOOLS

Issued monthly during the school year by the State Education Department

CHARLES F. PROBES, *Editor* MILDRED HAND, *Assistant*

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The University of the State of New York
Bulletin to the Schools

VOLUME 37 FEBRUARY 1951 NUMBER 6

Arbor and Wild Life Day

ARBOR DAY, which is now widely observed in many countries throughout the world, had its origin in America in 1872. The idea of a day set aside "for the planting of trees and for conducting a program to inculcate a love for all living things" spread rapidly through Canada and South America and won speedy recognition in various European countries. In the northern climates, the observance is usually held in April or May; in southern latitudes the celebration occurs at various times from December through March.

As greater understanding for the need of conservation has grown, the annual observance becomes of ever-increasing significance, and many of the schools in New York State plan their celebrations as an opportunity to emphasize the teaching of conservation by planting trees, arranging field trips, setting up classroom experiments and stressing the understanding of the proper use of all our natural resources.

At this time when it is particularly important that we understand the necessity of protecting our fields, forests and wild life and all the natural resources with which we have been endowed so generously, it is fitting that we renew in the hearts of our young people the pledge "to save and faithfully defend from waste the natural resources of our beloved country — its soil and minerals, its forests, waters and wild life, its beauty and its glory."

Therefore, by virtue of my office as Commissioner of Education, and in accordance with the law, it is my duty and privilege to designate April 13th as Bird Day and April 27th, May 4th or May 11th, whichever best suits the convenience of each locality, as Arbor and Wild Life Day.

Lewis A. Wilson

LEWIS A. WILSON
Commissioner of Education

Keys to Conservation Teaching

A Trained and Enthusiastic Teacher Can Inspire Youth To Conserve Our Natural Resources

C. W. MATTISON
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U. S. Forest Service
Washington, D. C.

EFFECTIVE CONSERVATION EDUCATION must start in the schools. We can not hope to condition great numbers of people to the wise use of our natural resources unless they recognize their responsibilities from their early youth. Educators generally subscribe to this premise and believe that adequate instruction in conservation is a necessary part of the effort to make the schools better serve the community, the State and the Nation.

Foresters and other conservationists have always believed that the education of America's youth in the problems and practices of conservation is a big part of any conservation program for the Nation. The author, a resident of New York State, believes that because of the State's advanced educational program, conservation teaching can be particularly effective in helping to promote the wise use of New York's natural resources.

In recent years educators and conservationists have studied the teaching of conservation in the Nation's elementary and secondary schools to determine what is most needed for an effective program. Their findings, which seem entirely applicable to any state or community, indicate that before very much can be accomplished in introducing conservation education into the schools, school administrators, education associations and other school officials must recognize local, state and national conservation problems and have an active interest in solving them. The problems can be effectively presented to them through: (1) field informational or "show-me" trips where conditions and facts can be pointed out to them and where they can see for themselves and form their own judgments; (2) conferences where the problems can be discussed and proposals made for the schools' part in solving them.

Some New York educators are already active in conservation work and are, therefore, key people in any program for increasing conservation teaching in the schools of the State. They may be helpful in arranging conferences of school administrators to develop sound proposals for conservation teaching or in having the subject included in the programs of general education meetings. A first conference might consist of a selected group to review the whole problem and to make proposals for the entire State. This could be followed by other group meetings, or it might result in a definite program to be inaugurated in certain school systems or individual schools. This method could be varied through the inclusion of a forester or other conservationist in the program or discussion panel when school administrators meet. An example of progress was the inclusion of four discussions on conservation education in the program of the annual meeting of the American Association of

School Administrators held at Atlantic City, N. J., February 17–22, 1951.

A second and most important means of introducing the subject is by adequate training of teachers in conservation and conservation teaching. This includes both in-service training and pre-service training. Most teachers have had no training in conservation either in their general education or in specialized courses. A comparative few are now getting such training in teacher-training institutions.

Some methods through which in-service teacher training may be accomplished are:

First, by organized training programs in conservation teaching for a school or a group of schools. This, of course, often requires the help of a teacher-training institution and conservation officials. Where such an effort is made, educators in charge need any assistance practicable from foresters and all others engaged in conservation activities. Field trips and visual aids are excellent mediums for showing teachers the local need for forest, soil and water conservation and for preparing them to teach it. Practising conservationists can contribute much in this line by showing the need for conservation teaching and by working with teachers who seek ways and means of presenting the subject to pupils. Colleges and universities conducting such teacher-training courses may well give credits for them. Where no teacher-training institution is available, conservation consultants should play an even greater part.

Photograph by the author

Not a Picnic, But a Conservation Workshop for Teachers-in-Training

A second important method of training is by means of conservation workshops. Recent years have seen the rapid advancement of the workshop method of training teachers so that today its technics are applied to many phases of education, including conservation. Although it is used primarily for summer training it is not confined to that season of the year. It can be employed effectively on week ends or after school hours during the entire school year. It even has possibilities of application by radio.

The teacher workshop has proved itself effective in training teachers in conservation problems and practices, and methods and technics for teaching them. Its use in that field has been constantly expanding since World War II until in 1950 there may have been as many as 100 workshops which included conservation of natural resources in their training of teachers. They range in length from a few days to several weeks. Teachers do not go to them to get easy credits. Workshops mean work and those attending them have little free time.

To get the full significance of the contribution that teacher training in conservation is making to conservation in America, let us examine a specific workshop conducted twice yearly at Pennsylvania State College. During World War II and immediately following it, state and federal conservation agencies, the Department of Public Instruction, the Pennsylvania Federation of Women's Clubs, newspapers, sportsmen's groups and museums studied cooperatively the several ways of introducing more conservation teaching into Pennsylvania's schools. As a result the Pennsylvania Conservation Education Laboratory was sponsored. It started with two three-week sessions of 35 teachers each in the summer of 1946 and has continued in like manner for each succeeding summer.

On a typical one-day forestry field trip under the direction of faculty members of the Department of Forestry at the college, teachers' observations and discussions were centered around (1) salvage of timber on a burned area with demonstrations of the effective use of the power saw; (2) selective cutting in hardwood stands; (3) the relationship between forestry and wildlife management; (4) a stand of virgin timber. Here in the field was training in forest conservation problems and practices. It was followed in the classroom by teachers and workshop staff determining methods and technics of effectively conveying their knowledge to pupils during the school year.

An interesting fact about the Pennsylvania Conservation Education Laboratory is that teacher students attend on scholarships provided by some of the cooperating organizations. These scholarships, plus other outside financial assistance to the laboratory, reduce to about $30 the cost to the teacher of the three-week course. Thus the three credits cost the teacher only about $10 each.

In Pennsylvania one elementary school principal, a workshop student in 1947, has developed a comprehensive teaching unit, "Trees and Forests," for grades 1 through 8, now in use by teachers in her school. As a result of their training at this workshop, several teachers have carried conservation education outside the school by giving talks before teachers' meetings, service clubs, sportsmen's organizations, women's clubs, church groups and garden clubs.

Pre-service teacher training in conservation education also needs to be greatly extended and strengthened. Some teachers colleges have good conservation courses but they are generally elective. Teachers are not unlike other professional people who, through no fault of their own, complete their college training

with too little knowledge of the scope of conservation needs. To make conservation teaching effective all teachers in elementary schools, and especially teachers of the social studies, agriculture and the biological sciences in the secondary schools, should be thoroughly trained to teach wise use of the natural resources at such a level and in such a way as will fit the age, needs and interests of their pupils. That educators are thinking along these lines is evidenced by the inauguration of four-year conservation majors for teachers in a few colleges. Such courses now reach relatively few teachers but they are an indication of a trend. Pre-service training may, in the future, be accomplished more generally through conservation education courses offered by the teacher-training institutions. It may also be provided by integration of conservation materials in established courses.

A third means of developing this general field is by curriculum revision to include adequate conservation instruction. It is rather generally agreed that both elementary and secondary school curriculums should include this instruction. There should be a place for it in every grade from the first through high school. It seems to be the consensus that teaching of conservation in required courses such as the sciences and social studies is a good approach. Definite conservation courses for high schools may be practicable. Special conservation units in required courses are often considered of value in the upper elementary and secondary grades. But in all grades, conservation teaching may be included in required courses without the aid of special units.

Always indispensable are the materials suitable for use in conservation teaching. Textbooks in which conservation is adequately, accurately and simply treated may serve teachers well. But such supplemental aids as bulletins, films, slides, recordings, charts, maps, pamphlets, posters, cartoons, graphs and pictures must be available for reference and for covering the local phases of conservation. Unfortunately not all the current supplemental material is well adapted for school use.

Educators, in cooperation with foresters and other conservationists, can best stimulate a local or state-wide conservation education program by concentrating on the four main points listed above, although in any school or school system where the school administrators can follow only one course after they themselves decide on action, teacher training seems the logical choice.

What is the effect of such teacher training on the pupils? About 135 selected high school pupils, representing several states, were recently observed as they participated in three hours of discussion of natural resources with the primary interest on forests. In questioning them about their high school background it was found that those with by far the best knowledge of conservation problems and practices came from school systems having teacher-training programs in conservation, either in-service or pre-service or both.

Most teachers whose training has included forest, soil and water conservation are advocates of a sound comprehensive conservation program for the United States. Pupils of those teachers will have the background to encourage and support such a program as they assume the adult duties of citizenship.

NOTE. An excellent guide and source book by the above author, entitled Teaching Conservation: A Guide in Natural Resources Education, 1948, is available from the American Forestry Association, Washington, D. C.

Teach Nature Lessons Out of Doors

It's Easier Than You Think

WILLIAM GOULD VINAL
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TEACHERS HAVE many opportunities to take nature lessons back to nature; if not in camp schools, then by means of educational excursions and other diversions from the regular classroom routine. Some Chinese "walls-of-tradition" will have to be broken down; with moderate determination and imagination this can be accomplished. What are the "road blocks" to be hurdled?

The grass may look greener in the next valley and the fish larger in a more remote stream. Most persons, however, have to be taught to live where they are and to make use of what they have. A year ago a teacher in one of my extension classes, with the help of her children, discovered a sugar maple in the school yard. A neighbor taught them how to tap the tree, a mother helped in boiling down the sap, a sixth grade boy in science demonstrated gravity feed, a father and son built a "stone boat," and Sargent College camp made it possible for the teacher and children to go to camp and help in the sugar orchard and at the sap house. The children spent three days on school time in the neighboring state. Making use of community resources can be excellent education.

Courtesy of Charlotte Yoga, Newton (Mass.) Public Schools

Learning How To Tap a Sugar Maple Tree — and Hoping for a Treat

Courtesy of Silva, Inc., LaPorte, Ind.

It's Fascinating To Read Topographic Maps and To Plan Trips

That old bugaboo, insurance, is not a real difficulty. First of all, the teacher has to want to make the trip; the children of course are already anxious for it. There is no hesitation when it comes to the football team or the band going to Florida, and certainly there is no more danger to life and limb on a school excursion than there is on the gridiron. Public transportation companies carry insurance and are generous in prices in off-rush hours, which is when school children would want to go. Perhaps the school bus could go as readily in a new direction if the experience was enriching.

Some teachers are cheating youth out of the opportunity to go into the forest and fields because they themselves are fearful of snakes, catching cold, lack of discipline or getting scratched by briars. A scout leader recently took a troop of boys to a lake where men were fishing through the ice. The leader stood around while the boys hobnobbed with the fishermen and asked all kinds of questions about the different fishing gears. The teacher with the one sugar maple tree and the scoutmaster without knowledge about fishing through the ice set up ideal learning situations. These leaders not only had the courage to try but they won the respect of the youngsters.

Let's make sure that we do not just "sit" because it is easier. Gazing at an anemic goldfish in a glass jar is not a challenging or stimulating educational experience. The school can always get help for worth-while trips. The effectiveness depends largely on the attitudes of the school authorities and of the par-

ents toward outdoor educational practices. Some school systems have gone so far as to purchase a camp in order to make it possible for every public school child to have the advantages of camping out. School camp programs conducted on regular school time and integrated with classroom studies are being seriously experimented with in several states.

Schools have the opportunity to make "the rocks and rills, the woods and templed hills" meaningful. Children must not only see but together *grow* fields of waving grain in order to sing about them. When children go together into nature's outdoors, unfettered by man-made artificialities and factionalism, they are truly free.

If you are willing to concede that the hurdles are mostly "lame-duck" rationalizations you can easily see to it that school children get substantial nature experiences. Here are five basic approaches or specific ways for schools to take children back to nature.

First, by *orienteering.* Orienteering means the ability to use the map and compass out of doors. Gaining experience in the school yard as a laboratory is certainly better than sitting inside a classroom and talking about it. A new textbook on the subject entitled By Map and Compass, an Introduction to Orienteering, prepared expressly for Canadian schools, has just been released by the Macmillan Company of Canada, Ltd., 70 Bond street, Toronto 2, Ontario. The price will be less than a dollar. The Orienteering Newsletter is available from The Silva Company, 1811 Indiana avenue, La Porte, Indiana. It also publishes The Sport of Orienteering, priced at $2.

Second, *a school weather recording*

Courtesy of Leslie S. Clark, Battle Creek Public Schools

Not Too Young To Learn To Understand and Use Weather Recording Instruments

station is a must. The weather forecast determines trips, clothing, projects to be undertaken in the neighborhood and leisure-time activities. The Boy Scout merit badge pamphlet on weather also is a must. The Ways of the Weather, and Ask the Weather Man, by Bertha Morris Parker, published by Row, Peterson Company, are scientific, with excellent illustrations. Storm, by George R. Stewart is an excellent story. A condensation from this book appeared in the Reader's Digest for March 1942. Thirty booklets on weather are much better than one technical textbook on the subject.

Third, *school gardening is a fundamental need.* This may be simply raising radishes and lettuce, but in so doing the child himself is really growing. To beautify the school grounds or to establish them as a wildlife sanctuary is to allow the children to participate in an activity that will bring pride to the community. To toil with a spade and rake is physical education; to raise lettuce for the school lunchroom connotes health; to produce beauty is art; and to earn money to purchase seeds involves arithmetic. Activities with a purpose are functional education.

Fourth, *the Maine Junior Guide program.* To say that a man is a Maine guide is a guarantee of quality. It means that he is a true sportsman, knows the conservation laws and practises them, can row or paddle to the fishing grounds. He knows how to joint a rod and rig a line, and he can catch a fish. At noon he can cook a real guide's dinner and not set the forest afire. At night he can make a comfortable bed and camp out. He can predict the weather and knows what to do if caught out in the rain or snow. He has unfailing good humor and a storehouse of common sense in the woods. Best of all, he is capable of meeting any situation in the wilderness. In Maine, when a youth is trustworthy, resourceful and intelligent enough to take a group into the deep forest, as does a Maine guide, he is awarded the Maine Junior Guide degree. (See The Art of Living Out of Doors in Maine, a manual available from the Maine Development Commission, Augusta.)

Some Boy or Girl Scouts in your neighborhood may approach this high standard. If so, they will be glad to help the teacher who is willing and anxious to see that her boys and girls have outdoor experiences, the kind that will linger in their memories forever.

Fifth, *expeditions with a purpose.* Orienteering, weather wisdom, security and food are basic essentials for an expedition. An expedition might be a fishing trip, a survey of a public school camp site, a trip to get plants for an Indian garden, a week end to build a cabin, the establishment of a school forest, the construction of a fish pond or a visit to a bird sanctuary. One does not have to stretch his imagination very much to conceive that one of these expeditions might lead to a purposeful visit to the New York State Museum. Outgrowths related to topics already suggested might be to get the details of an Iroquois longhouse or an Indian garden, to obtain an insight into the mineral resources of your locality or to get a concept of the sea that once covered the site of the school several hundred million years ago.

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After nearly fifty years of teaching I can say that I have seen numberless teachers, including those who claim to be only amateur naturalists, create unbounded enthusiasm in their children by taking their nature lessons out into nature. It requires only enterprise and courage, imagination and vision. The results, in better citizens for the future, justify and reward the effort.

A Conservation-Minded College

Elmira Students and Community Join in a Practical Project

LYDIA BOURNE WALSH
Professor of Botany
Elmira College

LAST YEAR Dr Lewis Eldred, president of Elmira College, appointed a committee of two members of the faculty and one member of the community to plan activities through which the college students and citizens of the city of Elmira might become more keenly conscious of the need and methods of conservation of natural resources.

The program planned by the committee consisted of campus activities, including contests, an afternoon social affair at which the awards for the contests were presented, three public meetings and a day devoted to the planting of 10,000 seedling trees. Posters on conservation and Outdoor Life's Conservation Pledge were in all the campus buildings. The librarian arranged a display of books and periodicals on conservation in the main reading room of the college library as a part of this all-college program.

Courses in biology which normally give some consideration to conservation emphasized the subject more vigorously in the classroom, on the field trip and in the greenhouse laboratory. But how can courses in art, creative writing, speech and modern dance stimulate an interest in conservation? The art department sponsored a contest in poster work and one in sculpturing. The two weeks regularly devoted to poster making in a course in commercial design were used for the designing of posters on the subject of conservation. These posters and also the plaques modeled and fired by students in sculpturing were entered in contests. The prize-winning posters and plaques were exhibited.

Contests in essay writing and in short-story writing were directed by H. Sophie Davis, associate professor of English. "National Ignorance," "River Valley Reconstruction" and "We — the Enemies" are the titles of the three prize-winning essays. "Poison," "I Saw as in a Dream" and "Whiffenpoophs" received the prizes in the short-story writing contest.

Students in speech, under the direction of Professor Geraldine Quinlan, prepared both a debate and a panel discussion. The question of the debate was "Resolved, That the granting of power to the Northwestern New York Water Supply Commission by the Legislature is to be condemned." The panel discussion on "Conservation of natural resources is more important to humans for esthetic reasons than economic" drew upon subject matter from courses in esthetics and in economics and thus combined interests from three different departments.

Probably the most unique medium for stimulating interest in conservation was that of the modern dance. Members of Orchesis, the modern dance club of Elmira College, originated the choreography and presented the dance drama,

Members of the Modern Dance Club Interpret Devastation, from "The Plough That Broke the Plains"

"The Plow That Broke the Plains," under the direction of Thora McCready, instructor in the dance. The music is by Virgil Thompson and the script by Pare Lorentz. Records were used for the music, and students in speech gave the readings. The barefoot dancers wore princess-styled dresses in two tones of tan or two tones of green. The only stage property was an artistic representation of a hand plow. Like the documentary film, "The Plow That Broke the Plains," the student dance drama told the tragic happenings to the land of the Great Plains area through World War I boom to the drought and depression of the early thirties that resulted in the Dust Bowl. The story is of land, rather than of people.

Dr E. Laurence Palmer, professor of nature and science education at Cornell University, addressed the first of three public meetings on "Conservation in New Zealand." Since Doctor Palmer had been in New Zealand as Fulbright Exchange Professor, he could tell from firsthand experience what has happened without extensive conservation practices in a short time in a relatively small country with few complex problems. The lecture was illustrated with sound motion pictures and with kodachromes. Overgrazing by sheep was evident in many pictures; some conservation practices, however, could be seen in the contour cultivation of the croplands. The second meeting was a showing of two sound motion picture films, "Water for a Nation" and "Clean Waters." "Water for a Nation," obtained from the United States Department of Agriculture, showed how the farmer depends upon water and how the people of the nation depend upon the farmer. "Clean Waters," made by the General Electric Corporation in cooperation with the New

Students Prepare To Plant Trees on the Watershed of the City Reservoir

York State Conservation Department, is concerned with pollution of water and points out why and how pollution can be checked. The film, "The Plow That Broke the Plains," and the original dance drama of the same name presented by Orchesis were presented at the third public meeting. Neither the instructor in the dance nor the members of Orchesis had seen the famous film prior to the presentation of the dance exposition on the same program with the film. The music, recitative parts and story were the same in both the film and the dance.

The practical application of ideas on conservation took the form of Tree-Planting Day. The college girls planted 10,000 white pine seedlings covering ten acres of sloping grasslands on the watershed of the Elmira municipal reservoir. The Water Board supplied the mattocks for breaking the sod and arranged through the State Forester for the delivery of the trees. Faculty cars and the college truck carried the students to the watershed. The dietitian packed box lunches. The time for Tree-Planting Day, a holiday from classes, was available because an extra day had been planned in the college calendar. One hundred fifty girls were needed for the planting and 250 volunteered.

Tree-Planting Day was a great success and will be repeated. As soon as soil and weather conditions permit, the Elmira College students will plant a second 10,000 seedling trees on the watershed. When the planters return as alumnae, they will be able to see the plantation which they established. Educationally, Tree-Planting Day may well be the most valuable activity of the entire program. Besides, it was good fun.

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Wildfire versus Wildlife

Think Twice Before You Light a Fire

GUSTAV A. SWANSON
Head, Department of Conservation
Cornell University

DURING THE SPRING thousands of fires are set deliberately in New York's brushlands, meadows and marshes. The reasons, when real reasons exist, are various. The landowner may wish to kill off weeds or brush, to control insect pests or to stimulate quicker growth of grass in the spring. Quite frequently he may have no definite reason and gets the fever to burn his fields only because it's spring and burning is in the air.

If the harmful consequences of such burning were given the careful thought they deserve, we would have fewer fires. While our topic is primarily fires set deliberately and watched carefully so they do not escape control, it is appropriate to say a word about those which do escape. A fire out of control is a most terrifying experience. Only those who have helped extinguish a wildfire can realize how thoroughly exhausting and devastating the experience can be. Anyone who has once fought fire has gained a fear and respect for it that has made him more careful than ever to prevent fires.

In a normal year in New York, about 2000 fires get out of control so that the services of the State Conservation Department's forest fire-fighting crews are required to suppress them. The overwhelming majority of these fires are caused by such carelessness as smokers tossing matches or cigarets, or campers leaving campfires still smoldering. Of course they are preventable if greater precautions are taken.

The type of fire we want to consider especially here, however, is the one deliberately set — usually in the spring — to burn over grassland, marsh or brush. Let's examine the consequences of this type of burning.

This burning usually occurs on relatively wild land which is not being cultivated nor put to any intensive use, frequently not even being pastured. Such land is, of course, a natural habitat for wildlife of many kinds, and the burning is usually very destructive not only to shelter for wildlife in general, but to the nests and eggs of many wild birds. From early April on, when the woodcock begin to nest, an increasing number of ground-nesting birds build their nests in such wild land areas — including many of the very important game birds such as pheasants, grouse and several species of ducks. When the nests are burned over, the eggs are almost invariably destroyed even though the shells may not be broken. Commonly the incubating bird will return and brood these infertile eggs for a while, even though the protective cover has been so effectively destroyed. Birds that escape unscathed usually do nest again later but they almost invariably lay a smaller number of eggs on a renesting attempt, and the chances of bringing off a large and healthy brood has been greatly reduced.

The sudden and complete destruction of a tremendous amount of wildlife cover leaves many birds and mammals home-

Photograph by Soil Conservation Service

See What Happens!

less and thus far more vulnerable to predators and other enemies. So it can be accepted as an obvious fact that these spring fires are exceedingly destructive to wildlife, including many valuable birds and mammals which we protect by law and make many other efforts to encourage. But what about some of the other consequences?

For several decades the New York State Conservation Department has been distributing coniferous trees by the millions for reforestation throughout the State. Last year 26 million trees were distributed, and this spring it is expected that 35 million will be the grand total. The plantations of these little trees, frequently only an acre or two, are scattered throughout the entire State on wild land, and the very worst danger to such plantations at almost any stage of their growth is fire. All too frequently brush or grass fires, set with only constructive motives, escape and burn over these plantations, thus destroying a potential timber crop of the future, a present Christmas tree crop or, in any event, excellent game cover for deer, grouse, rabbits and other wildlife. One of the outstanding deterrents to reforestation in the areas of New York which need it so sadly is this hazard of fires in spring which in a few minutes may destroy the work and growth of years.

There are other less obvious but equally undesirable consequences. Every farmer knows the value of returning to the soil as much of the organic matter as possible in the form of straw or stubble, leaves or stems and barnyard manure, because this organic matter is an extremely important component of productive soil. The decomposition and incorporation into the topsoil of the old year's plant growth is nature's way of building soil fertility. To burn this organic matter instead does, it is true, make available certain elements much more quickly in the form of the ash, but continued burning year after year gradually depletes the productivity of the soil. The burning also stimulates quick runoff of the water rather than permitting its slow percolation into the subsoil to replenish the ground water supplies, so important a natural resource. The quick runoff of water resulting from the destruction of the protective cover sometimes induces destructive erosion on steep slopes where undisturbed vegetation would have prevented it.

There are, therefore, a great many

harmful features of spring burning which, if considered carefully, would discourage this all too frequent practice. The supposed beneficial effects of burning in the destruction of insects and weed seeds have largely been discounted through careful research on those matters, and conservationists generally agree that only in certain limited instances, and then only under the most careful control, is burning desirable and beneficial. As ordinarily practised, it is a destructive process which should always be discouraged.

The conservation laws of the State of New York and regulations of the Conservation Department require that permits be secured before starting fires to burn brush or similar material or before burning over grass areas in the "fire towns" of the Adirondacks and Catskills or in the "fire districts" in the counties of the Hudson valley and in Suffolk county. The conservation law also provides that throughout the State any person who through carelessness permits a fire to escape his control is liable for the cost of extinguishing the fire and, in addition, for any damage that may result from the fire.

Perhaps it might be well if we recommended that anyone living in rural areas should familiarize himself with the system of state fire wardens, if he resides in an area where the control of forest fires is a function of the State, or should become acquainted with the local volunteer fire department if his residence is elsewhere, in order that he will know immediately where to turn for aid if destructive fire does break out in his vicinity.

Photograph by U. S. Forest Service
Courtesy of D. B. Smith & Co., Utica

Prompt and Vigorous Efforts Are Needed to Control Wildfire

Cameras Are Better Than Guns

"Learn to Enjoy, Not to Destroy"

JOHN B. MAY
Associate Editor
Massachusetts Audubon Society Bulletin

WITH THE COMING of the open season for hunting each autumn, there is always a new crop of eager sportsmen joining the already vast army of gunners who are starting out with great anticipation of sport and trophies for what they refer to as "a day in God's great out-of-doors." After every hunting season the wildlife authorities, weighing the reports brought to them from the gunners and the wardens, make an estimate of the hundreds of thousands of ducks and geese, of grouse and quail, of woodcock and other game birds (not to mention the deer and moose and other game animals) killed by this great army, though they seldom even make an attempt to estimate the number of those crippled and ultimately dying, the result of the nation-wide fusillade. Year after year conservationists are confronted with the disagreeable facts of our diminishing wildlife, and hunting seasons are shortened, game bag limits reduced in size, and other restrictions imposed, of necessity.

No one who gives any thought to it will deny that much of the present decrease in our wildlife is unavoidable. The population of the United States is increasing by leaps and bounds and that means that more and more of our wild or marginal lands, the habitats essential for the welfare of our wildlife, the undisturbed areas required for breeding and feeding and resting, are being converted into agricultural lands, manufacturing sites and housing developments. This transformation is an inevitable and inexorable process but, as our human population approaches the saturation point, much of our wildlife, unable to adapt itself to the changed conditions, is doomed to diminish and perhaps ultimately to disappear completely, following the extinct great auk, Labrador duck, heath hen, Eskimo curlew, passenger pigeon and others.

Can that diminution of wildlife be slowed and that disappearance postponed? Every sportsman, every bird watcher, every true conservationist should ponder this situation seriously and regard the warning, "It is later than you think!"

For more than three score years I have watched and studied our wildlife from Maine to California, from Florida to Alaska and across the Canadian provinces. It is my carefully considered opinion that the time has come when we should make a very definite effort to offer to our children — the rising generation which will become the gunners of tomorrow unless it receives training different from that of its predecessors — a substitute for the destruction-dealing shotgun and rifle. And we already have such a substitute at hand and in use by a limited number of people. There are many excellent reasons why this substitute should be advocated and not one, in my opinion, against it.

The substitute, of course, is hunting with a camera, instead of a gun. The hard-boiled "he-man" who likes to boast

of his skill with rifle or shotgun and of his mighty bags, will perhaps pooh-pooh camera hunting as silly and effeminate, but that is only because he has never been lucky enough to watch a real demonstration of the skills required by the successful wildlife photographer and he has no conception of the difficulties involved in following that hobby nor of the thrills that come from their surmounting.

Many of the arguments which the dyed-in-the-wool gunner has long used to justify his "sport" may be used equally well by the camera hunter:

"Hunting takes one into the great out-of-doors," they say, "at a glorious time of year." But so does nature photography, and there is no "closed season" when the camera hunter must refrain from following his avocation.

"Hunting teaches woodcraft and the ways of the wild folk, and satisfies our primitive instincts inherited from our prehistoric ancestors." So does nature photography, unless we include "blood lust" among our inherited instincts and feel that killing is a necessary adjunct of our civilization.

"Hunting teaches alertness, patience, self-control and many other virtues." So does nature photography.

"Hunting fees produce more game and sportsmen's groups are active in game propagation." Nature photographers and bird watchers also voluntarily contribute very considerable sums toward wildlife conservation, which means increased production of both game and nongame species.

There is one great argument which is never used by the gunning fraternity for it is overwhelmingly in favor of those who hunt with the camera, and that would bring out too strongly the fact that hunting kills or cripples literally millions of wild creatures annually (also a not inconsiderable number of human beings) while nature photography injures no living creature.

The "trophies of the chase," of which the gunner boasts, are what? A few mouthfuls of food for the hunter or a stuffed specimen for the moths to devour. The trophies of the camera hunter include more lasting souvenirs — photographic prints and enlargements, colored slides, movies.

One of the arguments brought up against hunting with a camera is its cost, but the same argument holds equally true about gunning. The expense involved by either form of recreation depends entirely upon the individual's desires and purse. The cost of firearms ranges from a few dollars for a boy's single-barrel small-caliber gun to many hundreds of dollars for the finest imported gaming pieces. The same applies to cameras, from the cheapest fixed-focus beginner's

The Ten-Year-Old Son of the Author "Shot" This Heron with a Brownie Camera

Photograph by Allan D. Cruickshank, from National Audubon Society

A High-Speed Camera "Bagged" These Snow Geese as They Rose from Feeding Grounds

outfit through minicams and speed cameras to motion picture machines with their accessories of telephoto lenses, light meters, projectors and many other things which become desirable as one's ability develops. As the cost of the outfit mounts, the value of the photographic trophies also increases, but there is very little difference in the taste of a duck or grouse, regardless of what kind of gun procured it.

So I urge everyone to go hunting with a camera. If you don't own one of your own, borrow one from a friend or invest in one of the inexpensive but almost "foolproof" models and try your hand at this intriguing but bloodless sport. It does not require a safari to Africa, a chartered plane to Alaska or even an auto trip of a few hours. You can find friendly little creatures that allow one to come close enough for nature photography almost anywhere except in the heart of a great and noisy city (and even there, sometimes). You can start out very modestly, but remember to picture the wild creatures with their natural and appropriate backgrounds, which, after all, make much more artistic pictures than the close-ups of the expert, which may show only the bird or other creature, or even only part of it, in intimate detail, to be sure, but with no suggestion of artistry.

Don't expect great results at your first attempt. If you have ever been a gunner you probably remember how you first started out with an air gun or a Flobert rifle, long before you essayed any wing shooting. But sit in your snug living-room some cold day and, through the insulating glass of your window, snap the juncos and chickadees at your feeding

shelf. In the spring, try photographing a robin or other familiar bird at its nesting activities, or feeding its hungry young. Snap a chickadee taking suet or peanuts from a child's hand, or a catbird taking raisins. Catch, if you can, a hummingbird poised on whirring wings before a garden flower. See how close you can get to a woodcock on its nest or to a drumming ruffed grouse. That calls for knowledge of the bird's ways, keenness of vision to penetrate its camouflage and infinite patience in stalking. Vary your pictures with a chipmunk on an old stone wall and you will be amazed to see how fast it travels when startled. And if you ever get close enough to capture the graceful pose of buck or doe or the awkward bulk of a great moose, you will have ample reward for your skilful still hunting.

In the cool and colorful autumn, if you are still a hunter, take your camera with you into the ducking blind and try a few wing-shots with it at the speeding birds; your respect for some of our well-known nature photographers like Bovey and Storer and Cruickshank will go up 100 per cent. When the short hunting season is over, don't forget that the camera season is 12 months long each year and there are no bag limits or other restrictions on the number and variety of your potential targets.

Then some day will come the "showdown." After the prints are made from your negatives, or the kodaslides or color movies come back from being processed, you can ask some of your friends to come over and bring their children to see the results of your recent "hunting" experiences. Trophies of the hunt? Yes, and permanent trophies of which you may well be proud.

Children love to imitate their elders. If skill with the gun is the only sport set before them, they will naturally follow in the footsteps of their older friends or relatives. If they see the thrills and rewards of hunting with a camera set forth without prejudice, a long step forward in conservation will have been taken. You can make an important contribution toward the perpetuation of our wildlife by demonstrating to the young people of your own neighborhood (and to their elders too) the fun, the excitement, the difficulties surmounted and the rewards received when you go a-hunting with a camera.

The Massachusetts Audubon Society has adopted a slogan which we offer freely to all—

Learn to enjoy, not to destroy.

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Cover Leaflets Available

Single copies of the colored cover picture of the pileated woodpecker, with descriptive account, are available in leaflet form from the New York State Museum, Albany.

A Plan To Conserve Wild Flowers

Success with a Woodsgarden Should Interest Wild Flower Fanciers and Conservation Authorities

CLARENCE and ELEANOR G. BIRDSEYE
Gloucester, Massachusetts

ALTHOUGH MANY wild gardens consume more woods plants than they produce, successful woodsgardeners can and should be potent factors in restocking our woodlots, forests and wild-life preserves with the great variety and abundance of interesting and beautiful herbs, shrubs and ferns with which they formerly abounded. It is, we believe, high time to supplement purely restrictive conservation with the woodsgardener's equivalent of reforestation, wild flower restoration. To that end there should at once be initiated an officially sponsored cooperative effort involving federal, state and private conservation authorities on the one hand and selected woodsgardeners on the other.

Such a movement would have two primary objectives: propagation in and distribution from private wild gardens and public nurseries, and transfer from areas of great natural abundance to suitable preserved habitats not presently harboring the species that may have formerly occurred there.

We believe this proposal is entirely practicable. Our own experience, during 20 years of woodsgardening, proves that a great many highly desirable species of wild flowers, shrubs and ferns can be readily propagated and easily transferred to woods where they will thrive and spread. For instance, a handful of the great Solomon's-seal rootstocks scattered through our garden ten years ago have multiplied literally a thousandfold. A single starry Solomon's-plume, *Smilacina stellata*, and one spring beauty, appearing fortuitously among our other wild plants, have increased inordinately and have been transferred to many other spots where they have done equally well. A show-weary fringed bleeding heart, salvaged from an exhibit in a flower show, has flourished so prolifically that its descendants have overpopulated our own gardens and ancestored many new centers of population. Only two years ago we transferred a single runty rusty Woodsia fern several hundred miles to a crack in our ledge garden, and today we have 18 robust clusters which can at any time be separated into at least 100 individuals which will keep right on multiplying. Yet in all our flower hunts we've never found a single great Solomon's-seal, starry Solomon's-plume, spring beauty or rusty Woodsia within 100 miles of our home.

A great many other "wild flower fanciers" have, of course, been equally successful, and each garden has its own specialties. Recently, for instance, we have seen a photograph showing more Dutchman's-breeches blooming in one private woodlot than we've ever run across in all of New England; and although we ourselves have had little success with showy lady's-slippers we have just read of a man in New York State who has propagated and naturalized them by the hundreds. Such instances of outstanding success are commonplace.

But why should not state nurseries mass-produce and distribute the smaller woods plants as well as trees? Even the best managed woodlot or state park is only half interesting if it lacks the great variety of wild flowers and ferns with which it could abound.

So much for producing woods plants in "captivity." How about the other half of our proposed program? Why not transfer wild plants from areas of great natural abundance to suitable habitats in presently barren woodlands? Not 5 per cent of the wooded areas within 100 miles of the Massachusetts coast harbor more than a fraction of the woods plants originally found in them. For instance, on a large reservation near Gloucester we found only 22 species of outstanding woods plants — skunk cabbage (*Symplocarpus foetidus*), bead-ruby (*Maianthemum canadense*), pink lady's-slipper (*Cypripedium acaule*), small Solomon's-seal (*Polygonatum biflorum*), wood anemone (*Anemone quinquefolia*), wild sarsaparilla (*Aralia nudicaulis*), checkerberry (*Gaultheria procumbens*), partridgeberry (*Mitchella repens*), one goldenrod, two asters and two unidentified species of violets; also marsh, hay-scented, sensitive, cinnamon, interrupted, polypody, brake, lady and leather woods ferns. By contrast, in our own quarter-acre woodsgarden are all the foregoing and 93 additional native species of great beauty or interest, suitable for introduction into that comparatively barren public reservation!

Not a single hepatica is to be found in large areas of the Massachusetts woods where that delightful plant formerly abounded. Yet we know of one roadside patch of woods from which several hundred hepaticas could, without detriment, be transferred to start colonies in a score of equally suitable locations on

From a kodaslide by the Author

Red Baneberry Is Adaptable To Transfer from Its Native Habitat

barren areas controlled by the state of Massachusetts or the Trustees of Public Reservations. This could also be done in New York, in local parks and woods areas near cities where the native wild flowers have been largely destroyed.

Obviously much careful study must precede the transfer of woods plants from one area to another. Every species thrives within a relatively narrow range of conditions of light or shade, moisture, altitude, soil texture and chemical reaction, exposure and climate. But the requirements of almost every important species of wild flower and fern are known, and they can be made to grow in thousands of areas where such species are not now found.

Once suitable receiving areas have been selected, actual transfer of even very delicate species is not difficult. Most kinds of woods plants can be taken up, transported hundreds or even thousands of miles, and set out in new locations without any appreciable loss; and this can be done at any time of the year, even when the ground is frozen hard. We have dug hepaticas in Wisconsin and set them out in Massachusetts without losing a bloom; and we once carried a Canada lily, with a six-foot flower stalk bearing a dozen blooms, from western New York to the seacoast without setting it back a day. Some trailing plants (for example, foamflower) can be multiplied a hundredfold merely by snipping off sections of the runners and partially burying them in suitable new locations. Even arbutus can be successfully transferred and re-established in new locations hundreds of miles away — though the ease of propagating that plant makes transfer from the wild usually unnecessary.

It should be remembered, however, that some species of wild flowers are strictly protected by law in various states; and in no case should rare or uncommon plants be taken from their original location, with or without consent of the landowner. Also, widespread transplanting operations over long distances might conceivably result in mixing floras and obscuring the true picture of natural distribution for botanists engaged in the detailed mapping of species and races of plants. Particularly, in cases of uncommon or technical species, confusion might result from introducing superficially similar plant elements into a region outside their natural range. This danger may be obviated by advising the botanical institutions of any notable transplanting or plant restoration work that is being done. For example, the Brooklyn Botanic Garden and the New York Botanical Garden, which have been active in preservation of endangered species through distribution of seed, would appreciate receiving records of propagation and transplantings to wild areas, as would also the New York State Museum, which is intensively mapping the natural vegetation of the State.

This article is intended to be merely suggestive, for any such program must be thoughtfully formulated and carried out cautiously. Woodsgarden horticulture is still far from an exact science. But right now hundreds of successful woodsgardeners have surplus plants which they could use to colonize near-by barren woods. Later developments might well include university courses in wild flower propagation, inclusion of a wild flower horticulturist in state forestry departments and sponsorship by trustees of public reservations, the Wild Flower Preservation Society and other organizations interested in conservation.

NOTE. A book by the above authors entitled Growing Woodland Plants will be published this spring by Oxford University Press, New York, priced $4.

Do You Know the Trilliums?

New York State Has Five Species of This Familiar and Lovely Spring Flower

STANLEY J. SMITH
Senior Curator of Botany
New York State Museum

ONE OF THE LOVELIEST and most familiar of our spring flowers is the trillium, represented in New York State by five species. These plants have been known to science since the year 1620, when a Swiss botanist, Caspar Bauhin, first described and illustrated our large-flowered white trillium as a species of *Solanum*, or nightshade. His mistake still persists in the book name "three-leaved nightshade."

Species of trillium are found in many parts of the Northern Hemisphere, in eastern Asia and in North America. In New York State we have five species. The painted lady or painted trillium (*T. undulatum*) has definitely stalked leaves, white petals, each almost invariably marked at the base with an inverted "V" of color ranging from rose-pink to rose-purple, and an unangled ovary, which ripens to a brilliant scarlet fruit. It is found in acid soils in mixed or conifer woods, frequently about bogs, throughout most of the State with the exception of Long Island, where it has been collected only once in Nassau county.

All our other species have leaves which are not stalked, or only indistinctly so, with ovaries and fruits ornamented with angles or wings running from top to bottom. All but one of these have the flower stalked. Of those with stalked flowers, the large-flowered white trillium (*T. grandiflorum*) has white petals and a white or nearly white fruit. The species occurs in mixed woods, particularly of the birch-beech-maple association, usually in nearly neutral or alkaline soils. It is frequent in central and western New York, occurring eastward only in the major valleys circling the Adirondacks: the St Lawrence, Black, Mohawk, upper Hudson, and Champlain valleys. It is missing from the Adirondacks, the Catskills, the lower Hudson valley and Long Island.

Of the other two trilliums with stalked flowers, both have red to purple fruit. The nodding trillium (*T. cernuum*) has the flower-stalk turned downward so that the flower opens beneath the leaves, and has white to pink petals. The flowers have a faint sweet odor when fresh and are usually pollinated by bees. This species is somewhat frequent in the Hudson valley and on northern Long Island, occurring rarely elsewhere across the State at lower elevations. It prefers moist woods or swamps in this region.

The bethroot, wake robin or purple trillium (*T. erectum*) has the flower stalk erect to declined, so that the flower opens above or, rarely, just below the leaves, and has purplish red or yellowish petals. The flowers have a disagreeable odor when fresh and are usually pollinated by carrion flies. It is found in various types of woods in not too acid soils throughout the State, with the exception of outer Long Island. Some-

Courtesy of State Museum

Nodding Trillium

times, apparently, this and the preceding species hybridize, producing extensive colonies of interesting forms. The specimens formerly reported from New York State as the Gleason trillium (*T. gleasoni* or *T. declinatum*) are of this category.

The toadshade, or toad trillium (*T. sessile*), is our only species with no flower-stalk. The dull reddish (rarely yellow-green) petals are suberect and tend not to open far. Our only records are from the vicinity of Rochester and Chautauqua county.

It should be noted that these plants normally have all their above-ground parts arranged in threes, whence the scientific name, *Trillium*, and the common name, trinity flower. Freaks are not rare, however. The number of parts in a whorl may vary from two to eleven; several of the parts may be missing or modified into leaves or other organs. The author has seen one plant of the white trillium in which the petals were small and green like the sepals, the stamens were missing and the pistils were nine-parted instead of three-parted. Unlike many of the abnormalities, it bore seeds. Large colonies of these sports of the white trillium with the flowers showing various stages of transformation to leaves are known from a few localities in central New York. Occasionally specimens with extra whorls of leaves or with double flowers are found.

As with most wild plants, the economics of trillium are poorly known. Several species of fungi are known to infest them, including one cup-fungus, one smut, one rust and a number of imperfect types. Slugs are fond of them, and the writer has observed snails eating the leaves. A species of woodland thrips and a kind of leaf-roller, among other in-

sects, feed on the plants. Bees visit the flowers for nectar and pollen, while the pollen is also collected by carrion flies and beetles. Ants eat the pulpy parts of the fruits and seeds and possibly are the chief disseminating agents of these plants. The seeds are eaten by black duck, ruffed grouse, ring-necked pheasant, blue jay and brown thrasher, while the ring-necked pheasant also eats the rootstocks. The white-tailed deer has been observed browsing the tops and there is some evidence that they may dig the rootstocks in spring.

The leaves of the trillium have been used for potherbs. It is known that the aborigines of Kamchatka slice the rootstocks and eat them with caviar and that the same people consider the fruits a delicacy. It should be noted that the rootstocks are considered poisonous in this country.

Courtesy of State Museum

Purple Trillium or Bethroot

Courtesy of State Museum

Painted Trillium

The drug trillium consists of ground rootstocks of species of this genus. In colonial days it was used in connection with childbirth, a use learned from the Indians; from this came the name, birthroot, later corrupted to bethroot. During the years since, it has been used in a variety of ways and is still listed in some works on drugs. It is rather surprising that recently it has been discovered that the rootstocks contain great quantities of relatively pure chemicals useful in preparing hormones.

Horticulturally, the trilliums have been somewhat popular and are now increasing in favor. They are relatively easy to grow and the underground stems can be easily divided to increase the number. It is to be hoped that this advantage, together with their usefulness in the newer drug industry, will not result in wholesale destruction of the wild plants.

It should be noted that trillium seeds,

in the wild, need a period of cold (at least below 40° F) for two years in succession in order to germinate. Consequently no species is found, in North America, south of the line at which at least one killing frost a year occurs.

The plants should never be removed from the woods for garden ornaments unless they are found in great number. There are some dealers who offer these and other species with a written notice to the effect that recommendations of the Wild Flower Preservation Society for the collection of such materials have been scrupulously observed. Further, new methods of seed germination and root-stock propagation will shortly remove any necessity for depleting this resource of beauty and food for wildlife in its native habitat. The trillium, one of our handsomer spring flowers, may thus be passed on to posterity.

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Wild Shrubs Can Be Useful

When Properly Planted, They Conserve the Land and Also Please the Eye

ARTHUR W. HOLWEG
Supervisor, Game Management
New York State Conservation Department

THE IMPORTANT PART that the wild shrubs play in our rural life is usually not recognized nor are their usefulness and value appreciated as fully as they should be. It is true that their beauty does not escape us. Spring walks reveal the beautiful flowers of the rhododendrons, the laurel and the azalea. In a fall drive the sumac shows as one of the important contributors to the blaze of color that greets us when the leaves turn. But beyond the esthetic appeal we should take stock of the multifold values of our shrub heritage.

It is true that shrubs may become misplaced by poor land management that permits them to encroach into places that interfere with the best interests of the farmer and landowner. Properly managed, shrubs fit into the scheme of good farming and good land use generally. There are definite places where they should be encouraged. For example, when the woodlot adjoins the cropped land, there is a zone where tree roots prevent proper crop development. In this strip shrubs are a natural deterrent to soil erosion. They belong, likewise, in the outer zone around forest plantations and in fence rows, in hedges, on stream banks, along drainage ditches and on untillable spots in cultivated fields. They should be encouraged in locations subject to erosion or otherwise unproductive for the usual farm products. They

are good soil binders; they provide nesting sites and food sources for birds and animals that help control insect pests on the farm; the nut bearers in particular produce edible foods; they add to the attractiveness and value of the land. Often they prevent excessive drought by their wind-break action.

To wildlife, shrubs are vitally important. Where wildlife value is to be stressed, the humble briar patch and sumac thicket should be held in esteem. Our native ruffed grouse eats quantities of staghorn sumac fruits. Cottontail rabbits eat the stem of the sumac and find a near-by patch of raspberries or blackberries useful, not only for food but also for cover offering protection from their enemies.

It is at the field edges and woods margins, along the water areas lined with shrubs, and along hedges and fence rows that wildlife seeks food and cover. This applies particularly to our upland game. The planting of shrubs or the encouragement of already existing ones in those locations will increase the local populations of such species as the grouse and rabbits in the uplands, and the pheasants and rabbits in the lower areas. These species are attracted by an environment which provides their requirements for food and cover within a few acres.

Wildlife needs a balance between breeding habitat, escape cover and winter shelter as well as a year-round supply of food and water. Shrubs, properly located and selected as to type, go far toward establishing this balance. Shrub borders, hedgerows and contour fences also serve as travel lanes for birds and animals which otherwise would have to pass across unprotected areas.

Where valuable shrubs exist through natural establishment, they may be encouraged easily by cutting out trees, not otherwise useful, and less desirable plants. Where they are desired and are not already present, they may be planted. For general purposes the spacing should be from three to five feet apart, depending on the size that the shrubs are expected to attain. Once planted, they need little attention except protection from grazing during the early stages of their development. To reduce competition for moisture and soil nutrients it is usually advantageous to plant the shrubs in spots from which the cover has been scalped with a mattock or, better still, in plowed fertilized strips. Mulching the plants after planting will always assist in bringing them through the first critical season when they are trying to put down a firm root system.

The Division of Fish and Game of the New York State Conservation Department has been producing the shrubs for their multifold wildlife food and cover and soil erosion control qualities, during the past several years. During the spring of 1951 there will be distributed from the nursery at Painted Post a total of 2,750,000 shrubs, principally of the following species: multiflora rose, silky dogwood, hazelnut, Tartarian honeysuckle, arrowwood, nannyberry, coralberry, high-bush cranberry and bayberry.

These have been distributed free of charge to cooperators through the 38 Soil Conservation Districts which have been established in as many counties in the State. Shrubs are also available to cooperators in the districts created under the Forest Practice Act, but that program has not yet been clearly outlined. This policy has been established because it has been felt that shrubs would contribute most in the carefully planned farm-land programs of the Soil Conservation Districts. In the future, we may be able to supply shrubs direct to private individuals, just as our Bureau of Nurseries supplies seedling trees. For

Courtesy of New York State Conservation Department

Multiflora Rose Makes a Living Fence and Decorates the Landscape

the present, however, individuals seeking shrubs must obtain them from commercial nurseries or by application to the county Soil Conservation Districts.

It may be well to outline some factual details on one kind of shrub, the multiflora rose, as an example of the usefulness and attractiveness of shrubs as a group. The multiflora rose has been publicized widely, and considerable response is evidenced by the fact that it is receiving widespread trial throughout the State. This species of rose came originally from Asia, being native to China and Japan. It was introduced into the United States many years ago and has been used by commercial rose growers as an understock for grafting purposes in the production of hybrid roses. Its possibilities for farm use were more recently recognized by the United States Soil Conservation Service.

Multiflora rose is a dense thorny shrub which can be planted for a hedge or fence, and on maturity should stand about six feet high. It is the thorny variety, only, that should be used in conservation plantings. In summer, if planted as a hedge, it is dense and green and pleasant to the eye; in late May and June clusters of small white flowers form a beautiful part of the landscape. When the leaves drop in the fall, the masses of small red fruits, or rose hips, add color to the thorny mass of interlaced branches. In a mature hedge old growth is replaced by new shoots from the original base. Experience shows that suckering and layering do not occur unless layering is stimulated by covering the stems during farming operations. Root growth usually is concentrated in a space two or three feet wide underneath the plant. In our latitude there seems little danger of the multiflora rose spreading unduly through natural seeding.

As a living fence multiflora rose has

many good features. It forms a permanent barrier to livestock and is easier to establish and less expensive to maintain than post and wire fences. It acts as a firebreak because there is no grassy growth beneath its branches, and it should serve well as a snow fence. It does not draw fertility from surrounding fields, and cropping is possible up to the very edge of the field border. The same thorny growth that repels livestock deters predators from freely molesting wild life. When planted densely, as around gullies and ponds, it makes excellent escape cover for cottontails and pheasants. The rose hips are persistent throughout the winter and provide considerable winter food for many kinds of birds.

Multiflora rose is best planted in the spring, roughly from April 1st to May 31st. Fall planting should usually be avoided, principally because of plants heaving out before the following spring through alternate freezing and thawing of the ground. The quickest and most efficient way to establish the plant is to plow and harrow a bed six to eight feet wide for the entire distance to be planted. A bed furrow down the center should then form the planting line and the plant's roots covered by reverse furrowing. Mulching with hay, straw or sawdust is important, particularly if early establishment of the hedge is desired through holding back weeds and conserving moisture. A top dressing of manure is desirable, especially in poor soils.

We anticipate that this planned use of shrubs throughout the State will expand steadily. An item of particular interest is the experimental 4-H Club shrub border planting project started in 1950 which has been guided by Dr Wilson Clark, the extension conservationist at Cornell University. Doctor Clark, through the cooperation of the 4-H Club agents enrolled club members in seven counties of the State. This educational project will be extended during 1951. It is hoped that schools which own land will become interested in similar educational and demonstrational shrub planting programs.

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Acknowledgment

This Arbor and Wild Life Day number of the BULLETIN TO THE SCHOOLS was compiled with the cooperation of the New York State Museum. The editor desires to express his appreciation to Dr Carl E. Guthe, Director of the State Museum; to Alvin G. Whitney, Assistant Director, and to all who contributed articles and photographs.

The American Eagle Needs Friends

Maligned and Neglected, the Great Bird, Our National Emblem, Is Fast Disappearing

WILLARD G. VAN NAME
Emeritus Associate Curator
American Museum of Natural History

WHY SHOULD WE allow the unfortunate fact to be soft-pedaled or ignored altogether, and concealed from the public as far as possible, that although only a few of our native mammals and birds have suffered complete extinction up to the present, there is a long list of them that are unquestionably on the toboggan slide toward that fate, and a number that will certainly reach the bottom very soon if measures to prevent it are not taken promptly?

Among these birds one of the most seriously endangered is the bald eagle, our national emblem and one of our largest, most magnificent and beautiful native species. Yet in spite of its size and aggressive appearance it is, except in the rarest instances, harmless and inoffensive and entirely undeserving of the relentless persecution (illegal for more than ten years past throughout the 48 states) to which it has been and still is subjected. Long before there was a federal law protecting it there were state laws in many states, but cases in which anyone was fined for killing an eagle were about as scarce as hen's teeth. Anyone who had killed an eagle had only to cook up some tale of having been wantonly attacked by the bird and coming off victorious only after a long and desperate struggle, and he not only escaped all prosecution, but had his heroism rewarded by the publication of his photograph, holding the eagle, on the front page of the local newspaper.

There are probably few creatures in the world, with the exception of some snakes, about which more false and preposterously exaggerated statements have been printed than the bald eagle. Many ornithological writers are responsible for this, copying from one book to another the most improbable tales about the eagle. Eagles do not feed on half-grown domestic animals. People living in Florida, where there are still some nesting eagles, say they do not even molest their chickens. They do not carry off babies. They do not attack human beings. If when one is shot down he puts up a last despairing fight against his destroyer or against someone who is robbing his nest of eggs or young, is not that something to respect, rather than to denounce him for?

No one denies that the eagle will pick up an occasional game bird or other animal, but only small or very young ones in the case of mammals; for the carrying power of eagles is one of their abilities that has been most preposterously exaggerated.

The truth about the bald eagle is that his chief and favorite food is fish and that if he can get fish he will usually not molest any other creatures. But he is not a very successful fisherman and often has to content himself with some dead fish that he finds along the shore. He commonly resorts to robbing the osprey,

Courtesy of the American Museum of Natural History

The Osprey Caught the Fish But the Eagle Will Get It

a considerably smaller bird but a much more expert fisherman. Weighted down by the fish and with both his feet employed in holding it, the osprey is unable either to escape or defend himself from the eagle, which dives at him and forces him to drop his prize. Then if high enough above the water the eagle will often catch the fish as it falls. This is most interesting to watch, but opportunities to do so are no longer frequent as both eagles and ospreys are now far from common.

The bald eagle formerly nested in all the 48 states but now there are some states in which it no longer nests at all and many in which one could probably count the nests on one's fingers. Florida probably has the most nests; there are said to be still several hundred there. But of late the number of eagles has been diminishing even in that region, for no apparent reason, as the bird is greatly liked and generally protected in that state.

In New York the nests are now very few and mostly in the northern counties. It is a great many years since the eagle nested in the lower part of the Hudson River valley, but in winter, when the inland streams and lakes are frozen, eagles sometimes to the number of half a dozen or more are frequently to be seen about the open water in the lower stretches of the river, almost down to the New York City limits. But they soon leave when open water is available farther north.

The bald eagle nests by preference in a tall tree, and suitable old trees are hard to find these days. Often when the tree

in which they have been accustomed to nest is cut or blown down, they permanently desert the neighborhood. Another thing that makes the bald eagle hard to protect is that it is not, as are some kinds of eagles, a bird of high inaccessible mountains but rather of the seacoast and inland lakes and river valleys — just the places now occupied by our chief cities, towns and industrial developments. In the United States proper the bald eagle is on its way out; there is no mistake about that.

In Alaska, however, there has been a splendid opportunity to save it, though there is fear that with the passage of the Alaska statehood bill now pending in Congress, that last hope will disappear. Though the bald eagle nests in only a small part (probably far less than one-fifth) of the area of that territory, it was very abundant there. Does it not seem as if on those sparsely inhabited shores it might have been allowed to remain so? But there, in its last remaining stronghold, it has been persistently and relentlessly persecuted through a bounty paid by the territorial government, with one intermission, ever since 1917. The bounty was at first 50 cents a bird; it was soon raised to $1 and for the past two years has been at the rate of $2 a bird. An effort to make it $5 failed in the Alaska legislature.

The number of eagle bounties reported paid is incredible. During the first seven years of the law, 41,812 bounties were reported paid and though there has been little publicity about it in recent years it is said that the total number has now very much exceeded 100,000, which means the destruction of many additional thousands since numbers of the birds shot are never recovered. The destruction is still going on; the information that in 1949 no less than 2125 eagle bounties at $2 each were paid, was obtained after some delay; the number for the past year (1950) as recently reported from Alaska, was 4320! It is only by persistent propaganda that the small but politically powerful clique of eagle killers has been able to dip into the territorial treasury for so many years.

One stock charge against the eagle is the destruction of salmon. The Alaskan salmon come up the rivers to spawn only once in their life and die after spawning. It is chiefly these dying fish that the bald eagles eat.

In 1940 Congress passed a law protecting this bird, our national emblem, in all the 48 states. In its original form it included Alaska, but the territorial congressional delegate objected and succeeded in getting Alaska excepted from the application of the law.

Ten years have elapsed but no efforts to amend the law so that it would apply to that territory have been successful.

Will people never learn that the time to protect a species from extinction is while there is still a large breeding stock left?

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A Blue Jay's World

Called Rascal or Thief, This Engaging Bird Knows Nothing of Man-Made Laws

AUSTIN L. RAND
Curator of Birds
Chicago Natural History Museum

WE PERSONIFY THINGS in nature, and endow them with human attributes — the mountains are friendly, the plains inhospitable. This helps us to remember them in certain moods, and to remember how they impress us. But this represents only our own feelings; to the next person the mountains may be hostile, the plains friendly. In reality the mountains remain the same; they are neither good nor bad.

It is the same with birds and with other animals. The blue jay, for example, is sometimes called an engaging rascal or a handsome freebooter, with more than a tinge of tolerance; at other times he is called an outlaw and robber, a thief or a robber of other birds' nests, and a cannibal without redeeming features. This helps to fix in our minds what impresses us most in blue jay behavior. But unfortunately it also conveys a judgment of the blue jay on moral grounds.

When the blue jay takes our grain he is not breaking any blue jay law; when he takes eggs from a robin's nest, it is no more robbery than when a chickadee eats insect eggs; when he eats a downy woodpecker it is no more cannibalism than when we eat beefsteak! The fact of the matter seems to be that when the blue jay's actions please us, we call him good; when they displease us, we call him bad! But the blue jay is neither good nor bad, any more than the mountains or the plains are good or bad. We can not judge them by moral standards any more than we can measure distance in gallons.

In a jay's world, the good acts are those that enable it to escape its enemies and to get enough to eat — in short, to survive or to raise enough young to replace itself when it dies. The bad actions are those which may cause its death or the death of its young. In nature these are the standards of success and failure established by a long regime of survival of the fittest.

My wife and I have raised many young blue jays by hand; we have studied what they do and tried to understand what makes them act the way they do. A jay's behavior, like its plumage, is basically inherited from its parents. Without any previous experience it carries out rather complicated acts just as every other blue jay does. Take bathing for instance. One of our young blue jays, when 28 days old, hopped by accident into its water dish. When it felt the water it squatted down and went through the actions of bathing, just as perfectly as would an old bird. Experience, learning or previous introductions were unnecessary. Its performance was perfect the first time. But though these actions were perfect when first performed, there was learning involved in knowing when to use them. Sometimes the feel of the water on their feet started the jays bathing; sometimes the sight of the water was enough. And it happened that at first

some of the young jays would go through the motions of bathing when they were outside the water dish, stimulated by the sight of the water in front of them. They evidently got poor satisfaction in this, and in time they learned that to enjoy their bath they had to be in the water. The actions were inherited but the circumstances appropriate to them had to be learned.

These blue jays had a rather discriminating sense of taste, although when they were just beginning to hop about and pick up objects, they swallowed many things that were not food. One ate dirt and pebbles at this stage, so we quickly removed it from its cage. It also ate a rubber band and green leaves off a branch. Partly by trial-and-error learning, repeating that which gave them pleasure and avoiding things they found unpleasant, they came to know what was palatable.

Blue jays do remember things, although our best examples of avian memory come from our experiences with thrashers, and with a barred owl. The thrashers were fed each morning in a little dish. One morning we put some small squares of hard-boiled egg white in their feeding dish. They ate it avidly. To test their sense of taste, we then put similar hard-boiled egg white squares that had been soaked in formalin to make them ill-tasting. The thrashers ate them the first time but for a week afterward they would not eat egg white. They had not only learned, but they remembered. We had a similar experience with our barred owl. One day we gave it a toad. It seized the toad at once, but quickly dropped it and gave every evidence of disliking the taste of toad, presumably due to the acrid secretion from the toad's skin. After that the owl would ignore not only toads but also frogs, although before his unfortunate experience with the toad he had liked frogs.

When studying bird habits in Florida with Archbold Expeditions we used two young blue jays to see how quickly they learned strange things. We fed them on scant rations, but also put a little container — in effect a miniature bucket — full of food in their cage, and suspended it by a string from their perch. To get it they would have to pull up the string. Within three days one of the jays was regularly pulling up the bucket. Sometimes it would take five different pulls to bring up all of the eight-inch string. Between pulls the string was held under one foot until the jay got another beak-hold farther down. Now when you know birds intimately you recognize them as individuals, and we saw that only one of the jays was drawing up the bucket. We were pleased with the progress shown by this one jay but were surprised by the jay's companion, for it made no effort to pull up the bucket. It always waited for the other to pull the food within reach, and then shared it.

This, it seemed to us, offered an opportunity to make a further test. Supposing we removed the jay that did all the work, would the other bird have profited by seeing its companion pull up the bucket and learn to do this itself more quickly than had the first jay? So we removed the jay that did the work. The other, that had always waited for its companion to pull up the bucket, now took four days to learn what the first jay had learned in three days. Its previous experience in watching its companion do this evidently had been of no value to it.

Young jays do learn some things from the adults, however. For a time after the young are out of the nest the parents take them to certain places and feed them certain things. The young jay has an inherited pattern of behavior and through

Photograph by Hugh M. Halliday
Courtesy of National Audubon Society

This Bird Needs Our Tolerance

association with the adult learns when and where to use it. A good example of how jays profit from other birds is their learning to come to a food tray by seeing other birds attracted to it.

Birds learn from others not only in feeding but also in escaping enemies. When the young are sitting quietly out of the nest and a predator approaches, the old jays may make a fuss or outcry. The young become excited and fly away with the adults. It is the beginning of mental associations so that when the young jay next sees a predator he is again excited and flees. Thus a certain amount of tradition may be handed on from one generation to another.

One of the most clear-cut cases I know of birds profiting by the experience of a few of their number has to do not with the blue jay but with his larger — and perhaps more intelligent — black cousin, the crow. Twenty-five years ago, when the almond crop was ripening in the state of Washington, crows converged on the almond orchards in flocks of hundreds and thousands, ate the nuts and threatened to destroy the whole crop. Shooting only made the crows more wary. Poisoned rabbits were put out in the hope of killing the crows, but after a few crows were thus killed the others left the poisoned meat alone, profiting by their unfortunate companions' experience, and continued to feed only on the almonds. Then poison was placed in the almonds. A few crows died of the poison. The rest of the birds quickly realized something was wrong. After much cawing and flying about the crows left the region entirely. The farmers saved their almond crop, but most of the crows saved their lives, too, by realizing something was amiss when they saw several of their number poisoned. Profiting by this, they moved away and escaped a like fate. It was not a conscious response; they did not reason it out but through association and appropriate action they achieved the result.

We have seen that one blue jay has habits and his whole way of life much like every other blue jay. These he inherits from his parents. The influence of his own experience and that of his companions changes them somewhat but not a great deal. Many generations of jays have lived under nature's regime of the survival of the fittest, and this is the blue jay law. Not only the blue jay but chickadees, robins, hawks and all the other birds live by this law. Sometimes the robin by eating cherries or the blue jay by eating other birds' eggs — all quite within their law — interferes with our comfort or pleasure.

Do we wish to harm the robins and blue jays or shall we, understanding a little of their nature, practise tolerance and find the world big enough for all?

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Don't Pour Oil on Troubled Waters

Dumping of Waste Oil from Ships Kills Hundreds of Thousands of Waterfowl

STANLEY O. GRIERSON
Vice President, Bedford Audubon Society

THE MERCURY had barely reached 20° F. at midday on January 8, 1950. The raw wind sent the surf pounding on the beach and its spray stung our eyes. What were we doing on the desolate beach this time of the year? Our little group was pushing its way along the cold and wind-swept shore in the hope of seeing a snowy owl! These large beautiful migrants from the far North had been reported in this area, and we had never before been fortunate enough to see one in the wild.

The area we covered that day was from Gilgo Life Guard Station to Cedar Beach, a stretch of about two and a half miles, near Jones Beach State Park on the south shore of Long Island. This area is attractive to the big white owl because the terrain is similar to the treeless, barren wastes of the Arctic and there is plenty of its favorite food. Meadow mice abound in the brown grassy areas back of the beach and Norway rats are common, although one might not suspect their presence for they are seldom seen by day.

We completely forgot the driving wind and cold when one of the party spotted a snowy owl perched on a sand dune, his large yellow eyes directed toward us. He let us approach within a few yards and then sailed softly away. We were not to see any more of these flying rat-traps that day, but we observed some far different migrants from the northland. They lay dead all about us, pitiful little masses of oil-soaked feathers.

These dead birds were dovekies or little auks (*Alle alle*), also called "sea doves" or "ice birds." They are

stockily built, about the size of a robin, but they resemble small penguins, their upper parts being black and their under parts white. These small sea birds breed in the Arctic regions and after the nesting season is over, migrate southward and spend the winter off our coast, feeding and resting on the open sea out of sight of land. Occasionally very bad storms will force them in to shore.

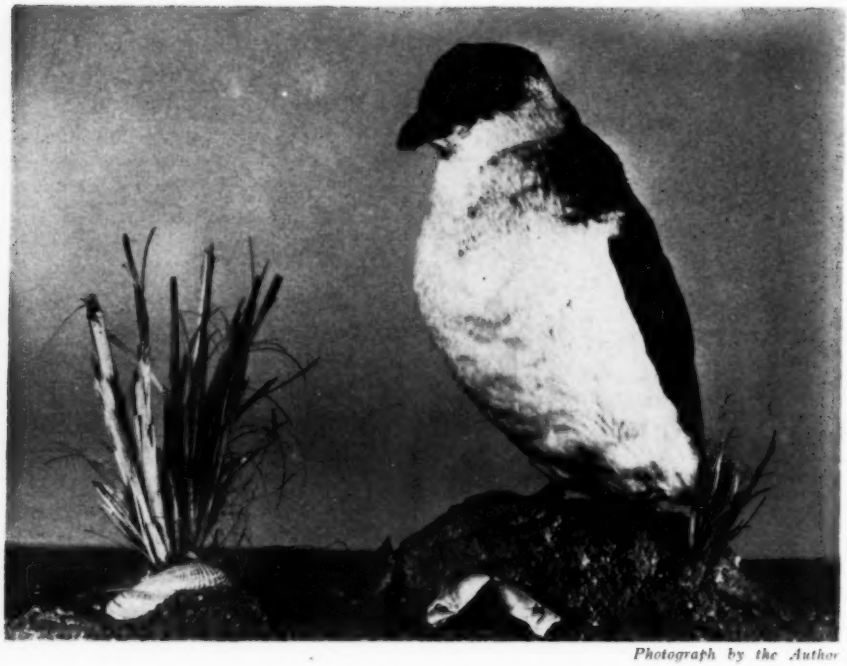
Examination of these birds at our feet revealed that their plumage was covered by "Bunker C" fuel oil, the type of fuel used on oil-burning vessels. Within three hours we found 25 dovekies and a razor-billed auk on this two-and-a-half miles of beach -- all killed by oil and cast upon the shore by the action of the waves. This made us realize that the over-all kill must have been very high, for if we could find 26 oiled birds in a few hours on a small stretch of beach where the shifting sand quickly buried them or roving rats dragged them away and devoured them, the number of these birds destroyed by oil on the high seas must have been enormous. During the next few weeks reports of large numbers of oil-soaked birds came in from Massachusetts, from New Jersey and from other parts of Long Island.

Many persons do not understand how oil kills water birds. There are several factors that enter into it. If badly oiled, the bird is rendered flightless, for the oil becomes sticky like tar when it comes in contact with salt water. The bird dies of starvation because it is unable to hunt for food or it may die immediately of suffocation. A moderate amount of oil causes death because the bird tries to remove it with its bill. Some oil is swallowed and oil in the stomach quickly kills a bird. Even a very small amount can kill, although it may take longer. Oil on the feathers sticks them together, disrupts the insulation effect and a bird dies of pneumonia from the cold. Some slightly oiled birds come in to shore to get away from the cold water, for the oil mats their feathers against them, allowing the ice-cold water to come in contact with their bodies. Waterfowl in this condition often seek relief by leaving the water and soon freeze or starve to death. Heavily oiled birds are usually washed in dead by the sea but some have been found alive and these succumb in a very short while. Efforts to remove oil from a bird usually prove fruitless, for any agent that removes the oily stain also removes the bird's natural feather oil. The feathers then become water-soaked, causing the bird either to drown or to die of cold.

Birds get into this oily condition through the thoughtlessness of man. There are laws prohibiting the dumping of waste oil on coastal waters, but enforcement is difficult. Many birds, like the dovekie, winter on the open sea beyond the jurisdiction of coastal regulations, and it is here that many ships clean their fuel-storage tanks and dump the oil sludge on the sea.

Waterfowl do not become entrapped in this oil merely by accident. Oil on the water has a calming effect upon the choppy seas so it is quite natural that flocks of birds should head for the quiet areas, and when they land on these oil slicks they are doomed.

There are many reasons why dumping of oil must be stopped, but let us consider just this one important reason. The dovekie is of great ecological value; in other words, the interrelation between the dovekie and other forms of life is important. This tiny relative of the now extinct great auk is the staple diet of the Greenland Eskimo. These hardy northern tribes depend largely on the dovekie for food, capturing thousands of them



Photograph by the Author

Monument to Man's Indifference
Specimen of Dovekie Killed by Oil. Mounted by the Author.

during the summer months and storing them in frozen ground to be used as a winter food supply. The heavily feathered skins are sewn together to make warm clothing. The dovekie also indirectly supplies the Eskimo with fur, because the Arctic fox hunts dovekie nests and subsists to a large extent on them. If the dovekie should become extinct like its cousin the great auk, the Arctic fox might follow, and the Greenland Eskimos would lose a most important source of both food and clothing — this because the dovekies, though not decreased by Eskimo and fox, are destroyed in vast numbers by floating waste oil dumped on the high seas by thoughtless or indifferent seamen, a thousand miles from the birds' Arctic breeding grounds.

An international educational program for all persons in merchant marine service should be undertaken by the United Nations. A method worked out by the Navy to remove floating oil slicks from our harbors consists of spraying a mixture of carbon and sand on the surface of the slick; the carbon absorbs the oily scum and the weight of the sand carries the mixture to the bottom. It is inexpensive and easy to use, but this in turn can have a detrimental effect on fish and other ocean life. It would seem to be the duty of our Coast Guard, however, to remove all oil slicks discovered near our shores.

It should also be of interest to our federal Fish and Wildlife Service, whose duty it is to protect those birds which are covered by the Migratory Bird

Treaty Act of 1918. It is gratifying to know that a poster has been prepared by several conservation organizations to be placed on all American ships asking for cooperation in preventing oil pollution. This should be done by all countries. Audubon Magazine has carried several articles on this problem of oil, bringing it to the attention of the public.

Sportsmen should be interested because dovekies are not the only victims of oil. Hundreds of thousands of waterfowl including ducks, geese, grebes, swans, loons, cormorants and gulls fall victims to the careless disposal of oil in coastal and inland waters. Not long ago 20,000 wild ducks died in oil slicks in the St Lawrence river as the result of a tanker accident.

We gathered together little piles of oil-soaked dovekies, that winter day, and several of them found their way into museums after being thoroughly cleaned and prepared as study skins or mounted birds. Specimens from this trip were sent to the Museum of Natural History in New York City, the New York State Museum in Albany, and the Trailside Museums at Bear Mountain Park, N. Y., while others were added to the writer's personal collection to be used at lectures on bird conservation.

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A Community Bird Life Exhibit

"I'll Be Here Every Day It's Open"

ELSBETH R. MC CLURE
Wellsville Chapter, American Association of University Women

A BIRD LIFE EXHIBIT was the first venture in a plan for a series of exhibits to be sponsored by the Wellsville Branch of the American Association of University Women in cooperation with the David A. Howe Library. This experiment may interest other communities.

One boy wrote in the registration book, "very best exhibit"; another said, "I'll be here every day it's open," and adults as well were kind in their remarks. But the greatest satisfaction was the stimulation of interest in the birds and their protection and the sense of a project well done. We attempted to stress the idea that birds are not only beautiful creatures but are also of economic value and deserving of consideration.

A bird feeder building contest was held in connection with the exhibit. Cash prizes were awarded to children in different age groups and all entries were put on display.

We were fortunate to have available an outstanding birds' egg collection which belonged to the late Charles H. Munson of Wellsville. It comprises nearly 2400 eggs representing close to 400 species. We displayed them on tables, in drawers where they are usually kept, but covered with cellophane for protection.

Ralph Ray jr of New York City lent us some of his original water colors of birds, and Donald Malick of Olean let us borrow a number from him.

From the Rochester Museum of Arts and Sciences came a collection of 23 mounted songbirds. These were shown in a central position on a tiered stand.

A local taxidermist, John Snyder, allowed us to use his specimens of owls and game birds. This formed another display unit near-by. It included a snowy owl, two great horned owls, a saw-whet owl, pheasant, grouse, a wood duck and a lesser scaup duck.

C. Huber Watson, naturalist and nature writer of Andover, generously lent his fine bird photographs.

Several persons contributed birds' nests, which were displayed in glass cabinets with their respective eggs, when it was possible, pictures of the birds, and, in some cases, actual bird specimens.

Because our exhibit was held late in November, a Christmas tree for the birds was included. We decorated it with strings of popcorn, raisins and berries. Pine cones filled with suet, raisins and pieces of apple were hung on the tree, along with whole apples, clusters of mountain ash berries, other wild berries and suet. A simple feeder was made from an ordinary coat hanger by cutting it at one of the lower corners and threading on dry bread and apples. We put it on our birds' Christmas tree.

A chart showing shrubs and trees which would attract the birds was displayed. It consisted of sprays of berries and fruit with colored pictures cut from a seed catalog, around the edge. Two remaining sections of wall space were used to display Audubon prints against a background of black building paper. When the exhibit opened we discovered that there was a set of the original Audubon's "Birds of America," in town, and the owner let us borrow it.

The library set up sections of bird books for both children and adults. The National Wildlife Federation, Washington, supplied us with a variety of conservation leaflets, which were distributed free of charge.

The Chamber of Commerce provided us with printed programs, because the project was of benefit to the community. These programs called attention to the special activities held on three afternoons. Paul Davie, merchant and naturalist, showed some reels of his excellent colored bird movies. Mrs Florence Maddren, teacher, played the Cornell birdsong records and showed slides of the birds. Mrs Edna McMurtry, naturalist and former teacher, gave a talk on "How To Be a Bird Watcher." About 75 persons attended each of these programs.

The printed programs included suggestions for being kind to the birds as well as a list of some of the ways birds are useful. The back page presented a little bird identity quiz, taken from the Better Homes and Gardens magazine, and used with permission.

In order to assure a good attendance at the exhibit we emphasized publicity through several channels. We had about ten newspaper articles announcing the coming contest and exhibit, giving contest rules, publishing the prize winners' names, telling about the programs and about different phases of the exhibit. There were posters in the library and in store windows. The contest and exhibit were announced in the local schools, and at Boy and Girl Scout meetings. All the schools in the county were invited to attend.

A register placed by the door was signed by 500 persons during the exhibit, but of course recorded only a fraction of the attendance.

The Pileated Woodpecker

NEARLY AS BIG as a crow, the pileated woodpecker is by far the largest and most spectacular representative of its family in New York State. Its great size and the flashing black-and-white wing pattern at once distinguish it from our other species. Many people who never have seen the bird have heard its hesitant *kuk kuk kukkuk kuk* flicker-like call in woodlands. If the bird itself is seen at close range, the flaming crest is a striking feature. The entire crest of the male is red, as is also a "mustache mark" on each cheek; the female has a blackish forehead, smaller red area, and the "mustache" is blackish also. The beauty and character of this bird are well portrayed in the hitherto unpublished sketch, by Louis Agassiz Fuertes, reproduced on the front cover.

When digging for insects the pileated woodpecker follows the grain of the trunk or limb, making a large and usually oblong or much elongated cavity. These are made mainly in winter and often in what appears to be a healthy tree. Close inspection reveals, however, that these trees contain colonies of carpenter ants or other insects. The ants begin at the roots or ground level and work up inside the tree, destroying much wood and leaving little or no outward sign of their activity. The bird works up and down the trunk, testing it by pecking and tapping, the pauses between taps evidently being spent listening for a response from any insects that have been disturbed within. After a thorough testing, the bird concentrates on one portion of the tree and excavates a cavity into the ant colony. It can make a sizeable slit, six inches deep, in an hour and a half. When a colony is reached, the woodpecker inserts its long tongue into the ant tunnels and draws forth the insects on the sticky end of its tongue. A tree is visited repeatedly until the insects are cleaned out. Trees in all stages of infestation or decay are sought, even stumps and logs on the ground. In fact, the flicker is the only woodpecker in our State that spends more time near and on the ground. The diet is varied by eating berries and fruits in season.

Unlike feeding excavations, nesting cavities usually have a nearly round opening about three-and-a-half inches in diameter. A deciduous tree on low ground is preferred for this, the entrance being well up but below the tree crown. Other trees, however, as well as live and dead stubs are occupied, the male (who does most of the digging) spending irregular intervals for as long as a month excavating the nesting cavity. Three or four eggs make a clutch. The male incubates at night. The eggs hatch in 18 days and the young birds, fed by both parents, are fledged in 22 to 26 days. They remain with their parents until late fall and then disperse to seek areas of their own. The adults are rather sedentary, remaining for years in the same locality and, in winter nights, sleeping in cavities in adjoining trees. At all seasons they fly daily to suitable areas to feed.

It is unfortunate that this woodpecker, a conspicuous living target, is shot wantonly by some gunners. Insects, not the woodpecker, damage trees, the bird excavating after the real damage has been done. Formerly rare in many populated areas in New York State and elsewhere, the pileated woodpecker has benefited from protection and a better educated public so that now it is a familiar sight in and about fairly small wooded areas in many agricultural districts.

RALPH S. PALMER
State Zoölogist
New York State Museum